FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	F-influent	Client:	Landau Associates
Date Received:	05/21/12	Project:	1198003.010.011, F&BI 205300
Date Extracted:	05/24/12	Lab ID:	205300-01
Date Analyzed:	05/29/12	Data File:	205300-01.012
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	111	60	125

Analyte:	Concentration ug/L (ppb)
Copper	12.0
Zinc	2,890

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	FF-effluent	Client:	Landau Associates
Date Received:	05/21/12	Project:	1198003.010.011, F&BI 205300
Date Extracted:	05/24/12	Lab ID:	205300-02
Date Analyzed:	05/24/12	Data File:	205300-02.072
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	97	60	125

Analyte:	Concentration ug/L (ppb)
Copper	2.83
Zinc	1,730

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	B-influent	Client:	Landau Associates
Date Received:	05/21/12	Project:	1198003.010.011, F&BI 205300
Date Extracted:	05/24/12	Lab ID:	205300-03
Date Analyzed:	05/29/12	Data File:	205300-03.013
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	106	60	125

Analyte:	Concentration ug/L (ppb)
Copper	3.69
Zinc	2,880

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	BB-effluent	Client:	Landau Associates
Date Received:	05/21/12	Project:	1198003.010.011, F&BI 205300
Date Extracted:	05/24/12	Lab ID:	205300-04
Date Analyzed:	05/29/12	Data File:	205300-04.014
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	108	60	125

Analyte:	Concentration ug/L (ppb)
Copper	3.27
Zinc	2,840

Analysis For Total Metals By EPA Method 200.8

Client ID:	G-influent	Client:	Landau Associates
Date Received:	05/21/12	Project:	1198003.010.011, F&BI 205300
Date Extracted:	05/24/12	Lab ID:	205300-05
Date Analyzed:	05/29/12	Data File:	205300-05.015
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	104	60	125

Analyte:	Concentration ug/L (ppb)
Copper	3.45
Zinc	3,120

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	GG-effluent	Client:	Landau Associates
Date Received:	05/21/12	Project:	1198003.010.011, F&BI 205300
Date Extracted:	05/24/12	Lab ID:	205300-06
Date Analyzed:	05/29/12	Data File:	205300-06.016
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	103	60	125

Analyte:	Concentration ug/L (ppb)
Copper	1.62
Zinc	3,190

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	D-influent	Client:	Landau Associates
Date Received:	05/21/12	Project:	1198003.010.011, F&BI 205300
Date Extracted:	05/24/12	Lab ID:	205300-07
Date Analyzed:	05/29/12	Data File:	205300-07.018
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	97	60	125

Analyte:	Concentration ug/L (ppb)
Copper	11.7
Zinc	160

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	DD-effluent	Client:	Landau Associates
Date Received:	05/21/12	Project:	1198003.010.011, F&BI 205300
Date Extracted:	05/24/12	Lab ID:	205300-08
Date Analyzed:	05/29/12	Data File:	205300-08.019
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	100	60	125

Analyte:	Concentration ug/L (ppb)
Copper	6.43
Zinc	141

Analysis For Total Metals By EPA Method 200.8

Client ID:	E-influent	Client:	Landau Associates
Date Received:	05/21/12	Project:	1198003.010.011, F&BI 205300
Date Extracted:	05/24/12	Lab ID:	205300-09
Date Analyzed:	05/29/12	Data File:	205300-09.020
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	100	60	125

Analyte:	Concentration ug/L (ppb)
Copper	6.54
Zinc	106

Analysis For Total Metals By EPA Method 200.8

Client ID:	EE-effluent	Client:	Landau Associates
Date Received:	05/21/12	Project:	1198003.010.011, F&BI 205300
Date Extracted:	05/24/12	Lab ID:	205300-10
Date Analyzed:	05/29/12	Data File:	205300-10.021
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	101	60	125

Analyte:	Concentration ug/L (ppb)
Copper	6.71
Zinc	87.1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Landau Associates
Date Received:	Not Applicable	Project:	1198003.010.011, F&BI 205300
Date Extracted:	05/24/12	Lab ID:	I2-338 mb
Date Analyzed:	05/24/12	Data File:	I2-338 mb.070
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	99	60	125

Analyte:	Concentration ug/L (ppb)
Copper	<1
Zinc	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Landau Associates
Date Received:	Not Applicable	Project:	1198003.010.011, F&BI 205300
Date Extracted:	05/24/12	Lab ID:	I2-338 mb
Date Analyzed:	05/29/12	Data File:	I2-338 mb.011
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	112	60	125

Analyte:	Concentration ug/L (ppb)
Copper	<1
Zinc	<1

Date of Report: 06/08/12
Date Received: 05/21/12
Project: 1198003.010.011 PO M08920, F&BI 205300

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 205300-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Copper	ug/L (ppb)	20	2.83	93	92	52-134	1
Zinc	ug/L (ppb)	50	1,730	95 b	129 b	51-142	30 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Copper	ug/L (ppb)	20	84	81-120
Zinc	ug/L (ppb)	50	84	82-120

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

205300

LANDAU ASSOCIATES

☒ Seattle/Edmonds (425) 778-0907
☐ Tacoma (253) 926-2493
☐ Spokane (509) 327-9737
☐ Portland (503) 542-1080
☐ _____

Please Bill Alaskan Copper ML XE 05-21-12 AIS
P.O. M08920

Chain-of-Custody Record

Date 5/21/12

Page 1 of 1

Project Name Alaskan Copper Project No. 1198003.00.011
Project Location/Event BMP Treatment Unit Testing
Sampler's Name Rosemary Trimmer
Project Contact Jerry Thompson-Alaskan Copper, Gary Hruitsing Joe Kalmar-Landau
Send Results To Jerry Thompson, Gary Hruitsing, Joe Kalmar

Turnaround Time
☒ Standard
☐ Accelerated
☐ _____

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters: Total Copper, Zinc	Lab I.D.
F-influent	5/21/12	1:15	H2O	1	X	01
FF-effluent	"	1:10	"	1	X	02
B-influent	"	1:20	"	1	X	03
BB-effluent	"	1:25	"	1	X	04
C-influent	"	1:30	"	1	X	05
CC-effluent	"	1:35	"	1	X	06
D-influent	"	1:40	"	1	X	07
DD-effluent	"	1:45	"	1	X	08
E-influent	"	1:55	"	1	X	09
EE-effluent	"	1:50	"	1	X	10

Samples received at 5 °C

Observations/Comments

X Allow water samples to settle, collect aliquot from clear portion
X NWTPH-Dx - run acid wash/silica gel clearup
___ run samples standardized to _____ product
___ Analyze for EPH if no specific product identified
VOC/BTEX/VPH (soil):
___ non-preserved
___ preserved w/methanol
___ preserved w/sodium bisulfate
___ Freeze upon receipt
___ Dissolved metal water samples field filtered
Other _____

Special Shipment/Handling or Storage Requirements on ice

Method of Shipment deliver to lab

Relinquished by	Received by	Relinquished by	Received by
Signature Rosemary Trimmer	Signature	Signature	Signature
Printed Name Rosemary Trimmer	Printed Name Nhan Phan	Printed Name	Printed Name
Company Landau Associates	Company FEBI	Company	Company
Date 5/21/12 Time 3:30	Date 5/21/12 Time 3:30 pm	Date Time	Date Time

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative Rev 8/09

AKC-0003797

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
e-mail: fbi@isomedia.com

June 8, 2012

Joe Kalmer, Project Manager
Landau Associates
130 2nd Ave. S.
Edmonds, WA 98020

Dear Mr. Kalmer:

Included are the results from the testing of material submitted on May 21, 2012 from the 1198003.010.011 PO M08920, F&BI 205300 project. There are 14 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Matthew Langston
Project Manager

Enclosures
c: Gerald Thompson, Gary Huitsing, Rosemary Trimmer
NAA0608R.DOC